Using CBM in a Response to Intervention Framework

Using CBM to Determine Response to Intervention
Module Series

- This module is intended to be used in conjunction with a series of modules.
  - Introduction to CBM
  - CBM in the Content Areas
    - Reading
    - Math
    - Written Expression
  - Other Ways to Use CBM Data
    - Using CBM to Determine RTI
You Will Learn:

- The difference between RTI and traditional assessment for learning disabilities.
- The basics of RTI using a three-tier model.
- Instructional interventions within each tier.
Note About This Presentation

- Although we use progress monitoring measures in this presentation to illustrate methods, we are not recommending or endorsing any specific product.
What Is Responsiveness-to-Intervention?

- Two methods for identification of students with learning disabilities:
  - Traditional IQ/achievement discrepancy
  - Responsiveness-to-intervention (RTI)
Why Use RTI Instead of IQ/Achievement Discrepancy?

- Education of All Handicapped Children Act (1975) defined “underachievement” as discrepancy between IQ and achievement.
- IQ/achievement discrepancy is criticized:
  - IQ tests do not necessarily measure intelligence.
  - Discrepancy between IQ and achievement may be inaccurate.
  - Waiting for students to fail.
Why Use RTI Instead of IQ/Achievement Discrepancy?
Why Use RTI Instead of IQ/Achievement Discrepancy?

- RTI is an alternative framework for “underachievement”: unexpected failure to benefit from validated instruction.
- RTI eliminates poor instructional quality as an explanation for learning problems.
- In this presentation, we operationalize unresponsiveness as dual discrepancy:
  - Student performs substantially below level demonstrated by peers and demonstrates a learning rate substantially below peers.
- Special education considered only when dual discrepancy, in response to small-group validated instruction, is found.
Why Use RTI Instead of IQ/Achievement Discrepancy?

RTI:
- When a low-performing student does not show growth in response to small-group validated intervention, to which most students respond, he/she is considered to have special learning needs, due to a disability, which require an individualized learning program. This is typically delivered under the auspices of special education.
Advantages of RTI

- Students identified as LD only after not responding to effective instruction.
  - Poor instructional quality is ruled out as explanation for poor student performance.
- Students provided intervention early.
  - RTI does not wait for students to fail.
- Student assessment data inform teachers about appropriate instruction.
  - Data help improve teacher instruction.
Approaches to Implementing RTI: Five Dimensions

- 1. Number of tiers (2–5)
- 2. How at-risk students are identified:
  - Percentile cut on norm-referenced test
  - Cut-point on curriculum-based measurement (CBM) with and without progress monitoring (PM)
- 3. Nature of Tier 2 preventative treatment:
  - Individualized (i.e., problem solving)
  - Standardized research-based protocol
- 4. How “response” is defined:
  - Final status on norm-referenced test or using a benchmark
  - Pre–post improvement
  - CBM slope and final status
- 5. What happens to nonresponders:
  - Nature of the abbreviated evaluation to categorize learning disability (LD), behavior disability (BD), and mental retardation (MR)
  - Nature of special education
Several Viable Approaches to Implementing RTI

In this presentation, we feature the most widely researched model.

1. Three tiers
2. Designating risk with CBM benchmark + PM
3. Standardized research-based Tier 2 preventative tutoring
4. Defining response in terms of CBM slope/final status
5. Nonresponders undergo abbreviated evaluation to answer questions and distinguish LD, BD, and MR
   - Receive reformed Tier 3 special education
Basics of RTI

- RTI relies on a multi-tier prevention system to identify students with LDs:
  - Primary prevention level
  - Secondary prevention level
  - Tertiary prevention level

- The model we discuss today incorporates 1 tier of intervention within each of the 3 prevention levels. (Some models incorporate more than 1 tier of intervention within each of the 3 prevention levels.)
Continuum of Schoolwide Support

Primary Prevention: Schoolwide and classwide instruction

Secondary Prevention: Intensified, validated intervention

Tertiary Prevention: Further intensified and individualized intervention

~80% of students

Continuum of Schoolwide Support
Basics of RTI

- **Primary Prevention (Tier 1):**
  - All students screened to determine which students are suspected to be at risk.
  - Students suspected to be at risk remain in primary prevention, with PM.
  - PM:
    - Disconfirms risk. These responsive students remain in primary prevention.
    - Confirms risk. These unresponsive students move to secondary prevention.
Basics of RTI

- Secondary Prevention (Tier 2):
  - Research-based tutoring
  - Provided in small groups
  - With weekly PM
  - At end of tutoring trial, PM indicates students were:
    - Responsive to Tier 2 tutoring. These responsive students return to primary prevention but PM continues.
    - Unresponsive to Tier 2 tutoring. These unresponsive students move to tertiary prevention (special education).
Basics of RTI

- Tertiary Prevention (Tier 3):
  - Special education services
  - With weekly PM
  - PM is used to:
    - Set Individualized education program (IEP) goals.
    - Design individualized instructional programs.
    - Monitor student response.
    - When PM indicates the student achieves benchmark performance, student exits special education (i.e., returns to primary or secondary prevention), with ongoing PM.
Three Tiers of RTI

TIER 1: Primary Prevention
- General education setting
- Research-based instruction
- Screening to identify students suspected to be at risk
- PM to (dis)confirm risk status

AT RISK

TIER 2: Secondary Prevention
- Validated or researched-based tutoring
- PM to assess responsiveness

RESPONSIVE
UNRESPONSIVE

TIER 3: Tertiary Prevention
- Special education
- PM to set IEP goals
- PM to formulate individualized programs
- PM to assess responsiveness

RESPONSIVE
UNRESPONSIVE
Typical RTI Procedure

1. Screen all students to identify suspected at-risk students.
2. Monitor progress of students suspected to be at risk to (dis)confirm risk.
3. Provide second preventative tutoring to at-risk students, while progress is monitored to assess response.
Typical RTI Procedure

4. Move students who prove unresponsive to secondary preventative tutoring to tertiary prevention. They receive comprehensive evaluation to answer questions and to determine disability.

5. Monitor progress in tertiary prevention to set IEP goals, formulate effective programs, and determine exit decisions.
So, RTI Is Embedded Within a Multi-Tier Prevention System: Analogy to Health Care

- High blood pressure (HBP) can lead to heart attacks or strokes (like academic failure can produce serious long-term negative consequences).
- At the annual check-up (primary prevention), HBP screening (like annual fall screening for low reading or math scores).
- If screening suggests HBP, then monitoring over 6-8 weeks occurs to verify HBP (like PM to ([dis]confirm risk)).
- If HBP is verified, second prevention occurs with relatively inexpensive diuretics, which are effective for vast majority, and monitoring continues (like small-group Tier 2 tutoring, using a standard treatment protocol, with PM to index response).
- For patients who fail to respond to secondary prevention (diuretics), then tertiary prevention occurs—experimentation with more expensive medications (e.g., ACE inhibitors, beta blockers), with ongoing monitoring, to determine which drug or combination of drugs is effective (like individualized instructional programs inductively formulate with progress monitoring).
Progress Monitoring: An Essential Tool Within RTI
Progress Monitoring

- PM is an essential tool for RTI.
- With PM, student academic performance is assessed using brief measures.
- PM takes place frequently (generally weekly) using alternate forms.
- CBM is one form of progress monitoring.
Progress Monitoring

- CBM benchmarks are used for screening.
- CBM slopes are used to confirm or disconfirm student risk status in Tier 1.
- CBM is used to define RTI in Tier 2.
- CBM is used to set IEP goals, formulate individualized programs, and determine RTI in Tier 3.
Basics of CBM

- Assesses student academic competence at one point in time to screen or evaluate final status
- Assesses progress frequently so that slope of improvement can be quantified to indicate rate of improvement
- Produces accurate and meaningful information about levels of performance and rates of improvement
Basics of CBM

- Assesses student performance at one point in time:
  - Two alternate forms are administered in same sitting.
  - Average score is calculated.

- Alex:
  - \((52 + 38) \div 2 = 40\)
  - 40 is Alex’s average CBM score for screening.
Graphing CBM Scores

- Graphs allows teachers to quantify rate of student improvement:
  - Increasing scores indicate responsiveness.
  - Flat or decreasing scores indicate unresponsiveness.
Graphing CBM Scores

Words Read Correctly

Weeks of Primary Prevention
Graphing CBM Scores

The vertical axis is labeled with the range of student scores.

The horizontal axis is labeled with the number of instructional weeks.
Calculating Slope: First, Draw a Trend-Line

![Graph showing trend line for Weeks of Primary Prevention against WIF: Correctly Read Words Per Minute]
Calculating Slope: First, Draw a Trend-Line

Step 1: Divide the data points into three equal sections by drawing two vertical lines. (If the points divide unevenly, group them approximately.)

Step 2: In the first and third sections, find the median data point and median instructional week. Locate the place on the graph where the two values intersect and mark with an “X.”

Step 3: Draw a line through the two Xs, extending to the margins of the graph. This represents the trend-line or line of improvement.
Calculating Slope: First, Draw a Trend-Line

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**Weeks of Primary Prevention:**

1 2 3 4 5 6 7 8 9 10 11 12 13 14

**WIF: Correctly Read Words Per Minute**

0 10 20 30 40 50 60 70 80 90 100

[Graph with data points and trend line indicating steps for calculating slope]
Calculating Slope: First, Draw a Trend-Line

**Step 1:** Divide the data points into three equal sections by drawing two vertical lines. (If the points divide unevenly, group them approximately.)

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Calculating Slope: First, Draw a Trend-Line

Weeks of Primary Prevention

WIF: Correctly Read Words Per Minute

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Calculating Slope: First, Draw a Trend-Line

Weeks of Primary Prevention

WIF: Correctly Read Words Per Minute
Calculating Slope: Next, for the Trend-Line, Quantify Weekly Rate of Increase

3rd median point – 1st median point

# of data points – 1

$(50 - 34) ÷ 7 = 2.3$
Calculating Slope: Next, for the Trend-Line, Quantify Weekly Rate of Increase

3rd median point – 1st median point

# of data points – 1
Calculating Slope: Next, for the Trend-Line, Quantify Weekly Rate of Increase

3rd median point – 1st median point

# of data points – 1

\[
(40 - 20) \div 8 = 2.5 \text{ slope}
\]
Sarah’s Graph: Primary Prevention

Words Read Correctly

Weeks of Instruction

Sarah’s slope: 
\[(16 - 3) ÷ 7 = 1.9 \text{ slope}\]
Jessica’s Graph: Primary Prevention

Jessica’s slope:

\[(6 - 6) \div 7 = 0.0\] slope
Jessica’s Graph: Secondary Prevention

Jessica’s slope:

\[
\frac{28 - 6}{11} = 2.0 \text{ slope}
\]
Sample Primary Prevention PM Class Report

Class Graph
School: Westgate
Teacher: Smith
12/20/03

Students to Watch (lowest 25%):
- Michael Cox
- David Perry
- Alan Craig
- LaShonda Jones
- Carson Wilkins
- Dana Sommers
Sample Primary Prevention PM Class Report

<table>
<thead>
<tr>
<th>Name</th>
<th>Score</th>
<th>Percent</th>
<th>Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jason Dunning</td>
<td>37</td>
<td>100%</td>
<td>+1.44</td>
</tr>
<tr>
<td>Katherine Rogers</td>
<td>33</td>
<td>94%</td>
<td>+1.57</td>
</tr>
<tr>
<td>Lee Tang</td>
<td>26</td>
<td>98%</td>
<td>+0.96</td>
</tr>
<tr>
<td>Andy Farrell</td>
<td>25</td>
<td>98%</td>
<td>+1.72</td>
</tr>
<tr>
<td>Stephanie Sampras</td>
<td>21</td>
<td>98%</td>
<td>+1.17</td>
</tr>
<tr>
<td>Julie Page</td>
<td>20</td>
<td>98%</td>
<td>+1.36</td>
</tr>
<tr>
<td>William Curtis</td>
<td>18</td>
<td>95%</td>
<td>+0.91</td>
</tr>
<tr>
<td>Jimmy Smithson</td>
<td>18</td>
<td>90%</td>
<td>+0.53</td>
</tr>
<tr>
<td>Caleb Jacobs</td>
<td>18</td>
<td>92%</td>
<td>+0.77</td>
</tr>
<tr>
<td>Eddie Danforth</td>
<td>15</td>
<td>91%</td>
<td>+0.82</td>
</tr>
<tr>
<td>Meagan MacKenzie</td>
<td>13</td>
<td>84%</td>
<td>+0.88</td>
</tr>
<tr>
<td>Adrian Alexander</td>
<td>12</td>
<td>81%</td>
<td>+0.35</td>
</tr>
<tr>
<td>Bryan Gunter</td>
<td>11</td>
<td>96%</td>
<td>+0.74</td>
</tr>
<tr>
<td>Kai-Yun Nguyen</td>
<td>10</td>
<td>70%</td>
<td>+0.49</td>
</tr>
<tr>
<td>Brad Williams</td>
<td>10</td>
<td>78%</td>
<td>+0.70</td>
</tr>
<tr>
<td>Shawn Brooks</td>
<td>9</td>
<td>73%</td>
<td>+0.56</td>
</tr>
<tr>
<td>Mark Mason</td>
<td>7</td>
<td>71%</td>
<td>-0.09</td>
</tr>
<tr>
<td>Alex Davis</td>
<td>7</td>
<td>100%</td>
<td>+0.48</td>
</tr>
<tr>
<td>Michael Cox</td>
<td>7</td>
<td>82%</td>
<td>+0.60</td>
</tr>
<tr>
<td>David Perry</td>
<td>6</td>
<td>86%</td>
<td>+0.48</td>
</tr>
<tr>
<td>Alan Craig</td>
<td>6</td>
<td>71%</td>
<td>+0.31</td>
</tr>
<tr>
<td>LaShonda Jones</td>
<td>5</td>
<td>65%</td>
<td>-0.20</td>
</tr>
<tr>
<td>Carson Wilkins</td>
<td>4</td>
<td>80%</td>
<td>+0.11</td>
</tr>
<tr>
<td>Dana Sommers</td>
<td>3</td>
<td>64%</td>
<td>+0.05</td>
</tr>
</tbody>
</table>
# Sample Primary Prevention PM Class Report

<table>
<thead>
<tr>
<th>CLASS STATISTICS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>School: Westgate</td>
<td>14.5</td>
<td>+0.70</td>
</tr>
<tr>
<td>Teacher: Smith</td>
<td>9.2</td>
<td>0.50</td>
</tr>
<tr>
<td>12/20/03</td>
<td>5.3</td>
<td>+0.20</td>
</tr>
</tbody>
</table>

### Score
- **Average score**: 14.5
- **Standard deviation**: 9.2
- **Discrepancy criterion**: 5.3

### Slope
- **Average Slope**: +0.70
- **Standard deviation**: 0.50
- **Discrepancy criterion**: +0.20

## Students identified with dual discrepancy criterion

<table>
<thead>
<tr>
<th>Students</th>
<th>Score</th>
<th>Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carson Wilkins</td>
<td>4.0</td>
<td>+0.11</td>
</tr>
<tr>
<td>Dana Sommers</td>
<td>3.5</td>
<td>+0.05</td>
</tr>
</tbody>
</table>
Three-Tier RTI Model
Three Tiers of RTI

TIER 1: Primary Prevention
- General education setting
- Research-based instruction
- Screening to identify students suspected to be at risk
- PM to (dis)confirm risk status

AT RISK

TIER 2: Secondary Prevention
- Validated or researched-based tutoring
- PM to assess responsiveness

RESPONSIVE
UNRESPONSIVE

TIER 3: Tertiary Prevention
- Special education
- CBM to set IEP goals
- PM to formulate individualized programs
- PM to assess responsiveness

RESPONSIVE
UNRESPONSIVE
Three Tiers of RTI

Student Does Not Have a Disability

Step 1: Screening
Is this student suspected at risk?

NO

YES

Step 2: Assessing Tier 1 Response
Is this student unresponsive to general education?

NO

YES

Step 3: Assessing Tier 2 Response
Is this student unresponsive to Tier 2 tutoring?

NO

YES

Step 4: Comprehensive Evaluation and Disability Classification / Special Education Placement
Answer questions that arise in Tiers 1 and 2. Also, what is the student’s disability label?

LD, MR, EBD
Three Tiers of RTI

TIER 1: Primary Prevention

TIER 2: Secondary Prevention

TIER 3: Tertiary Prevention
Tier 1—Primary Prevention

- All students screened using CBM
- Students scoring below a cut-score are suspected at risk for reading or math difficulties
- Suspected at-risk students monitored for 6 to 10 weeks during primary prevention using CBM
### Tier 1—Primary Prevention: Screening for Possible Reading Risk

<table>
<thead>
<tr>
<th>Grade</th>
<th>CBM Probe</th>
<th>Cut-Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>Letter Sound Fluency</td>
<td>&lt; 10 letters/minute</td>
</tr>
<tr>
<td>Grade 1</td>
<td>Word Identification Fluency</td>
<td>&lt; 15 words on list/minute</td>
</tr>
<tr>
<td>Grade 2</td>
<td>Passage Reading Fluency</td>
<td>&lt; 15 words in text/minute</td>
</tr>
<tr>
<td>Grade 3</td>
<td>Passage Reading Fluency</td>
<td>&lt; 50 words in text/minute</td>
</tr>
<tr>
<td>Grade 4</td>
<td>Maze Fluency</td>
<td>&lt; 10 Maze replacements/2.5 minutes</td>
</tr>
<tr>
<td>Grade 5</td>
<td>Maze Fluency</td>
<td>&lt; 15 Maze replacements/2.5 minutes</td>
</tr>
<tr>
<td>Grade 6</td>
<td>Maze Fluency</td>
<td>&lt; 20 Maze replacements/2.5 minutes</td>
</tr>
</tbody>
</table>

Note: These figures may change pending additional RTI research.
## Tier 1—Primary Prevention: Screening for Possible Math Risk

<table>
<thead>
<tr>
<th>Grade</th>
<th>Computation Cut-Off</th>
<th>Concepts and Applications Cut-Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1</td>
<td>&lt; 5 digits</td>
<td>&lt; 5 points</td>
</tr>
<tr>
<td>Grade 2</td>
<td>&lt; 10 digits</td>
<td>&lt; 10 points</td>
</tr>
<tr>
<td>Grade 3</td>
<td>&lt; 10 digits</td>
<td>&lt; 10 points</td>
</tr>
<tr>
<td>Grade 4</td>
<td>&lt; 15 digits</td>
<td>&lt; 5 points</td>
</tr>
<tr>
<td>Grade 5</td>
<td>&lt; 15 digits</td>
<td>&lt; 5 points</td>
</tr>
<tr>
<td>Grade 6</td>
<td>&lt; 15 digits</td>
<td>&lt; 5 points</td>
</tr>
</tbody>
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Note: These figures may change pending additional RTI research.
Tier 1—Primary Prevention: Confirming Risk Status With PM

- At the end of 6–10 weeks, student risk status is confirmed or disconfirmed.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Inadequate Reading Slope</th>
<th>Inadequate Math Computation Slope</th>
<th>Inadequate Math Concepts and Applications Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>&lt; 1 (LSF)</td>
<td>&lt; 0.20</td>
<td>&lt; 0.20</td>
</tr>
<tr>
<td>Grade 1</td>
<td>&lt; 1.8 (WIF)</td>
<td>&lt; 0.25</td>
<td>&lt; 0.30</td>
</tr>
<tr>
<td>Grade 2</td>
<td>&lt; 1 (PRF)</td>
<td>&lt; 0.20</td>
<td>&lt; 0.30</td>
</tr>
<tr>
<td>Grade 3</td>
<td>&lt; 0.75 (PRF)</td>
<td>&lt; 0.20</td>
<td>&lt; 0.50</td>
</tr>
<tr>
<td>Grade 4</td>
<td>&lt; 0.25 (Maze)</td>
<td>&lt; 0.50</td>
<td>&lt; 0.50</td>
</tr>
<tr>
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<td>&lt; 0.25 (Maze)</td>
<td>&lt; 0.50</td>
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Tier 1—Primary Prevention: Confirming Risk Status With PM

Digits Correct in 3 Minutes

Weeks of Instruction
Tier 1—Primary Prevention: Confirming Risk Status With PM

Problems Correct in 3 Minutes

Weeks of Instruction

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

- 0
- 5
- 10
- 15
- 20
- 25
Tier 1—Primary Prevention: Confirming Risk Status With PM

![Graph showing digits correct in 2 minutes over weeks of instruction.]

- X-axis: Weeks of Instruction
- Y-axis: Digits Correct in 2 Minutes

The graph illustrates the number of digits correct in 2 minutes over weeks of instruction.
## Tier 1—Primary Prevention: Confirming Risk Status With PM

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Tier 1—Primary Prevention: Confirming Risk Status With PM

Arthur’s slope:
\[(6 - 6) ÷ 8 = 0.0\]
Tier 1—Primary Prevention: Confirming Risk Status With PM

Case A

CBM Word Identification Fluency (words/minute)

Student Does Not Have a Disability

Step 1: Screening
Is this student suspected at risk (Word Identification Fluency < 15)?

No ➔ Yes

Step 2: Assessing Tier 1 Response
Is this student unresponsive to general education (Word Identification Fluency Slope < 1.8)?

No ➔ Yes

Step 3: Assessing Tier 2 Response
Is this student unresponsive to Tier 2 tutoring (Word Identification Fluency Slope < 1.8 AND end level < 30)?

No ➔ Yes

Step 4: Disability Classification/Special Education Placement
What is the student's disability label?

LD, MIR, EBD
Tier 1—Primary Prevention: Review

- All classroom students screened to identify suspected at-risk students.
- Suspected at-risk students remain in primary prevention and are monitored using CBM for 6–10 weeks:
  - Students with adequate slopes remain in primary prevention.
  - Students with inadequate slopes move to Tier 2 (secondary prevention).
Enhancing Tier 1: An Example of A Validated Practice

Peer-Assisted Learning Strategies (PALS) in Reading and Math
PALS for Grades 2–6

Developed by Dr. Douglas Fuchs, Dr. Lynn S. Fuchs, and colleagues at Vanderbilt University
http://www.peerassistedlearningstrategies.net
PALS Research

- Based on Juniper Gardens Classwide Peer Tutoring model
- More than 15 years of experimental research
- Title I and non-Title I schools
- Urban and suburban schools
- High, average, and low achievers
- Students in special education
- “Validated Practice” status from U.S. Department of Education
- Validated in reading (preschool through grade 6 and high school)
- Validated in math (kindergarten through grade 6)
- All students in a class are paired, so that higher and lower performing students work on highly structured activities.
Three Activities at Grades 2–6: First Is Partner Reading

- Partner reading is conducted for 11–12 minutes.
- Stronger reader reads aloud for 5 minutes.
- Weaker reader reads same text aloud for 5 minutes.
- Weaker reader retells story for 1–2 minutes.
- Readers read quickly, correctly, and with expression.
- Coach listens, corrects mistakes, and marks points.
- Roles are switched, and steps are repeated.
Three Activities at Grades 2–6: Second Is Paragraph Shrinking

- Paragraph shrinking is conducted for 10 minutes.
- Stronger reader reads new text aloud for 5 minutes, summarizing each paragraph:
  - Names the most important who or what.
  - Names the most important thing about the who or what.
  - Shrinks the paragraph to 10 or fewer words.
- Weaker reader reads new text aloud for 5 minutes, summarizing each paragraph.
- Coach listens, corrects mistakes, and marks points.
- Roles are switched, and steps are repeated.
Three Activities at Grades 2–6: Third Is Prediction Relay

- Prediction relay is conducted for 10 minutes.
- Stronger reader
  - Reads one half page aloud.
  - Makes prediction.
  - Reads half page.
  - Checks prediction.
  - States main idea.
  - Makes new prediction.
  - Continues reading next half page and repeats.
- Coach listens, corrects errors, and marks points.
- Roles are switched, and steps are repeated on next text.
Certificate of Validation

United States Department of Education
Program Effectiveness Panel
presents this
Certificate of Validation
for
Peabody Peer-Assisted Learning Strategies in Reading (PALS-R)
in recognition of your contributions to excellence in education

May 1, 1995 to May 2, 2001

Assistant Secretary
Office of Educational Research and Improvement
Important Features of PALS

- Reciprocal roles (coaches and readers)
- Structured activities
- Individualized
- More time engaged on task
- Includes all students
- Opportunities for success for all students
- Encourages positive peer interactions
- Practical and effective

NOTES:
- PALS is one example of a validated Tier 1 practice that can be added to a core reading program. Others also exist.
- Some core reading programs are based on stronger research than other core programs.
Three Tiers of RTI

TIER 1: Primary Prevention
- General education setting
- Research-based instruction
- Screening to identify students suspected to be at risk
- PM to (dis)confirm risk status

At-risk students

TIER 2: Secondary Prevention

TIER 3: Tertiary Prevention
Three Tiers of RTI

TIER 1: Primary Prevention
- General education setting
- Research-based instruction
- Screening to identify students suspected to be at risk
- PM to (dis)confirm risk status

At-risk students

TIER 2: Secondary Prevention

TIER 3: Tertiary Prevention
Students are tutored in small groups (two to four students in each group).

Tutoring takes place three or four times a week.

Each tutoring session lasts 30–60 minutes.

Tutoring lasts 10–20 weeks.

Tutoring is conducted by resource personnel or paraprofessionals (not usually the classroom teacher).
Tier 2—Secondary Prevention: Common Principles of Small-Group Validated Tutoring

- Point system is used to motivate students.
- Corrective feedback is immediate.
- Students master content before moving on to more difficult activities.
- Tutors are trained to implement tutoring with high level of fidelity:
  - Practice with other tutors and non-tutored students
  - Meet weekly to problem solve and share ideas
Tier 2—Secondary Prevention: Example of Reading Tutoring

- Two to four students
- Four times a week outside regular classroom
- Nine weeks
- Forty-five minutes each session
  - Ten minutes, sight word practice
  - Five minutes, letter sounds practice
  - Fifteen minutes, decoding practice
  - Fifteen minutes, reading fluency practice
### Tier 2—Secondary Prevention: Example of Reading Tutoring

<table>
<thead>
<tr>
<th>TUTORING WEEK</th>
<th>TUTORING SET</th>
<th>TUTORING NEW SIGHT WORDS</th>
<th>TUTORING SIGHT WORDS</th>
<th>TUTORING OLD SOUNDS</th>
<th>TUTORING DECODABLE WORDS</th>
<th>STORY</th>
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<td>a, m, t, s</td>
<td></td>
<td>am, Sam, at</td>
<td>Sam pg 2</td>
</tr>
<tr>
<td>2</td>
<td>the</td>
<td></td>
<td></td>
<td>mat, sat, am, Sam, at</td>
<td>Tat</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I</td>
<td></td>
<td></td>
<td>mat, sat, am, Sam, at</td>
<td>Sam pg 2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>on</td>
<td>c</td>
<td></td>
<td>cat, mat, sat, am, at</td>
<td>Fat Cat</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>with</td>
<td></td>
<td>cat, mat, sat, am, at</td>
<td>Tat</td>
<td></td>
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<tr>
<td>6</td>
<td>b</td>
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<td></td>
<td>bat, cat, mat, sat, am, at</td>
<td>Sam at Bat</td>
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<td>7</td>
<td>have</td>
<td>i</td>
<td></td>
<td>sit, bit, bat, cat, mat, sat, am, at</td>
<td>Tab</td>
<td></td>
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<tr>
<td>8</td>
<td>f</td>
<td></td>
<td></td>
<td>fit, fat, sit, bit, bat, cat, mat, sat</td>
<td>At Bat pg 13</td>
<td></td>
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<td>9</td>
<td>find</td>
<td>n</td>
<td>have, with, on, l, the, and, is</td>
<td>tan, fan, can, fit, fat, sit, bit, bat</td>
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<td>n, i, b, c, a, m, t</td>
<td>sad, mad, tan, fan, can, fit, fat, sit</td>
<td>Ham, Jam</td>
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<td>d, n, i, b, c, a, m, t</td>
<td>Dan, sad, mad, tan, fan, can, fit, fat</td>
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<td>r</td>
<td>one, has, find, have, with, on, l, the</td>
<td>d, n, i, b, c, a, m</td>
<td>rat, ram, sad, mad, tan, fan, can, fit</td>
<td>Sam pg 7</td>
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<td>13</td>
<td>said</td>
<td>two, one, has, find, have, with, on, l</td>
<td>r, d, n, f, i, b, c, a, m</td>
<td>rat, ram, sad, mad, tan, fan, can, fit</td>
<td>Sam pg 11</td>
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<td>see</td>
<td>o</td>
<td>said, two, one, has, find, have, with, on</td>
<td>r, d, n, f, i, b, c</td>
<td>Tom, rat, ram, sad, mad, tan, fan, can, fit</td>
<td>The pg 5</td>
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<td>15</td>
<td>was</td>
<td>g</td>
<td>see, said, two, one, has, find, have, with</td>
<td>o, r, d, n, f, i, b, c</td>
<td>bag, rag, nag, dog, rat, ram, sad, mad</td>
<td>A Tin Pig p 25</td>
</tr>
<tr>
<td>16</td>
<td>be</td>
<td></td>
<td>was, see, said, two, one, has, find, have</td>
<td>g, o, r, d, n, f, i, b, c</td>
<td>bag, rag, nag, dog, rat, ram, sad, mad</td>
<td>Jam pg 8</td>
</tr>
</tbody>
</table>
Tier 2—Secondary Prevention: Example of Reading Tutoring

GROUP TUTORING

**ACTIVITIES**

Before beginning a tutoring session, materials should be ready:
Matrices that you will need are listed under each activity. Make sure you have all the appropriate materials, and that your sounds, words, and stories match up with those in the lesson sequence.

**NOTE:** For all activities:
* Listen carefully to the group to make sure you catch and correct individual errors during choral response activities.
* Keep a brisk pace.
* Stay organized: as soon as you are finished with a set of cards, put them up in the appropriate envelopes.

**If a student is having difficulty, always model the item for the student, then have them repeat it:** “Listen to me. **Appropriate response:** [error].”

**If a student is echoing other students in the other group, call on the student individually, so they can get an extra opportunity to practice.**

**Positively reinforce the students in the group who are on-task. Use points to direct students towards desirable behaviors, rather than using them as a threat to students who are exhibiting undesirable behaviors.**

**If students were off-task for most of the activity, you do not need to award them points. Awarding points is up to your discretion. You may choose to only award points to students who were on-task.**

**Be on the lookout for any positive behaviors from students who typically misbehave. Try to “catch them doing good.” Award points generally whenever they are doing what they should be doing.**

**If students are asking questions, keep your answers in response as brief as possible and quickly re-direct them back on-task.**

**SIGHT WORDS** — 10 minutes

**Materials:**

- Sight word cards—one set for each student
- Student notebooks
- Point cards

Set Countdown timer.
Set Countdown timer for 8 minutes.
Introduce new sight word.

1. To introduce new words: “Let’s look at our new word for today. I’m going to say it and then spell it”
2. Show each new word card and say, “This word is ‘the.’ What word?”
3. All 3 students should respond chorally, “The.”
4. Point to the word card and say, “Say this after me. ‘The,’ ‘t’—‘h’—‘e.’”
5. All 3 students should respond chorally, “The, ‘t’—‘h’—‘e.’”
6. Repeat steps 2–5 if there are other new sight words.

**Review new sightword from previous lesson if there is not a new sight word.**

7. To review new words: “Let’s look at our new word from last time. I’m going to say it and then spell it”
8. Show each new word card and say, “This word is ‘the.’ What word?”
9. All 3 students should respond chorally, “The.”
10. Point to the word card and say, “Say this after me. ‘The,’ ‘t’—‘h’—‘e.’”
11. All 3 students should respond chorally, “The, ‘t’—‘h’—‘e.’”
12. Repeat steps 7–11 if there are other new sight words from the previous set to review.

LV 1
10.06.42 1
### Tier 2—Secondary Prevention: Example of Reading Tutoring

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The tutor introduces the new sight word, or if there is no new word, introduces the sight word from the previous set. The tutor states the sight word and spells it.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>The tutor asks the students to repeat the sight word and spell it.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>The tutor asks students to state chorally each sight word in the set (“What word?”)</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>If the students say a word incorrectly, the tutor says the correct word and the student repeats it.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>The tutor presents each sight word to each student individually and asks the student to state the word.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>If the students say a word incorrectly, the tutor says the correct word and asks the student to repeat it.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>The tutor repeats steps 5-6 with any sight words said incorrectly on the first trial.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>The tutor asks students to state the sight word for the day.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Tutor asks students to write the new sight word.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>If the student has written the sight word correctly, the tutor states that it is correct and asks the student to write the word again. Tutor repeats this step with each of the students.</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>If a student has difficulty writing the sight word, the tutor shows the sight word again and instructs the student to write it.</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>If any words are misread on the second trial, the tutor marks on the mastery sheet that the group will repeat the entire set.</td>
<td></td>
</tr>
</tbody>
</table>
Tier 2—Secondary Prevention: Example of Reading Tutoring

- over
- soon
- old
- put
- came
- were
- when
- white
- take
- aw
- ar
- ir
Tier 2—Secondary Prevention: Example of Reading Tutoring

DATA SHEET FOR RECORDING STUDENT SET

<table>
<thead>
<tr>
<th>Students:</th>
<th>Teacher:</th>
<th>Tutor:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Criteria: The first time a group has worked with a particular set: if any of the students still have any cards in the “Practice” pile after the second round of individual responses on the SIGHT WORDS, the entire group will repeat that set again. Write an “R” if the group needs to repeat a set. If none of the students have cards in the “Practice” pile after the second round of individual responses on the SIGHT WORDS, write a “√”. The group will start the next set during the next tutoring session.

If it is the second time a group has worked with a particular set: Write a “√”. The group will start the next set during the next tutoring session.

<table>
<thead>
<tr>
<th>Session #</th>
<th>Date</th>
<th>Set</th>
<th>Repeat or Move on</th>
<th>Did not master during session</th>
<th>Absent</th>
<th>Did a student’s behavior interfere with their own or other’s learning process? If so, please make brief comments (e.g., defiant, inattentive, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>2</td>
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<td>3</td>
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<td>4</td>
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</table>
Tier 2—Secondary Prevention: Example of Reading Tutoring

Set 64

Sam Helps With Zack

Sam has a baby brother, Zack.
Zack is small and needs lots of help.
Mom puts Zack in his blue sleeper, and
Sam zips the zipper.
When Zack is hungry, Sam helps feed him.
Mom sings Zack to sleep.
She says, “Sam, you are such a big help!”

Rocket #1

Name
Tier 2—Secondary Prevention: Example of Math Tutoring

- Two to three students
- Four times a week outside regular classroom
- Sixteen weeks
- Thirty minutes tutoring
  - Number concepts
  - Numeration
  - Computation
  - Story problems
- Ten minutes computer basic facts practice
Tier 2—Secondary Prevention: Example of Math Tutoring

TUTORING TOPICS

- Identifying and writing numbers to 99
- Identifying more, less, and equal with objects
- Sequencing numbers
- Using <, >, and = symbols
- Skip counting by 10s, 5s, and 2s
- Understanding place value
- Identifying operations
- Place value (0–50)
- Writing number sentences
- Place value (0–99)
- Addition facts (sums to 18)
- Subtraction facts (minuends to 18)
- Review of addition and subtraction facts
- Review of place value
- Two-digit addition (no regrouping)
- Two-digit subtraction (no regrouping)
- Missing addends
Tier 2—Secondary Prevention: Example of Math Tutoring

**Topic 7**  
**Place Value**  
**Day 1**

**Objectives**  
Students will:  
Identify tens and ones place value

**Materials**  
Review sheet 6  
Topic 7 Day 1 Tutoring Sheet 1  
Topic 7 Day 1 Tutoring Sheet 2  
Base 10 Blocks  
Paper  
Pencil  
Point Sheet

---

**Mastery Criteria:** Topic 7 Day 1 Tutoring Sheet 2: 9/9.

**Tutor:** The first thing we need to do today is complete this review sheet. I'll read the questions and you write the answers.

Read directions and allow time for students to answer.

Today we’ll continue working on place value. Last time we looked at rods and cubes on paper and wrote the number. Today, I’m going to show you rods and cubes and you’re going to **draw** the numbers. Let me show you what I mean.

Give students Topic 7 Day 1 Tutoring Sheet 1.

Put 2 rods and 4 cubes in front of students.

**Look, we have 2 rods** (point). **What do rods mean?**

If students give incorrect answer, tutor says **rods mean 10. What do rods mean?**

Students: 10.
Tier 2—Secondary Prevention: Example of Math Tutoring

8

____ is the number before 8.  
The number after 8 is _____.

35 ____ 37

____ is the number between 35 and 37.

40

____ is the number before 40.  
The number after 40 is _____.

17 ____ 19

____ is the number between 17 and 19.

34

____ is the number before 34.  
The number after 34 is _____.

24 ____ 26

____ is the number between 24 and 26.
Tier 2—Secondary Prevention: Example of Math Tutoring

\[
\begin{array}{c}
9 \\
\hline
2
\end{array}
\]

1 2 3 4 5

Done

Spacebar
Tier 2—Secondary Prevention: Example of Math Tutoring
## Tier 2—Secondary Prevention: Determining Response in Reading

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<thead>
<tr>
<th>Grade</th>
<th>CBM Probe</th>
<th>&lt; Slope</th>
<th>&lt; End Level</th>
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<tbody>
<tr>
<td>Kindergarten</td>
<td>Letter Sound Fluency</td>
<td>&lt; 1</td>
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<td>Grade 1</td>
<td>Word Identification Fluency</td>
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<tr>
<td>Grade 2</td>
<td>Passage Reading Fluency</td>
<td>&lt; 1</td>
<td>&lt; 60</td>
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<td>Grade 3</td>
<td>Passage Reading Fluency</td>
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<td>Grade 4</td>
<td>Maze Fluency</td>
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<td>&lt; 25</td>
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<td>Grade 5</td>
<td>Maze Fluency</td>
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<tr>
<td>Grade 6</td>
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Note: These figures may change pending additional RTI research.
## Tier 2—Secondary Prevention: Determining Response in Math

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<th>Concepts and Applications</th>
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<td>&lt; 0.50</td>
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<td>&lt; 0.70</td>
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<td>&lt; 20 digits</td>
</tr>
<tr>
<td>Grade 5</td>
<td>&lt; 0.70</td>
<td>&lt; 20 digits</td>
</tr>
<tr>
<td>Grade 6</td>
<td>&lt; 0.70</td>
<td>&lt; 20 digits</td>
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</table>

Note: These figures may change pending additional RTI research.
Tier 2—Secondary Prevention: Inadequate Response

- If student response to secondary prevention is inadequate:
  - In some RTI versions:
    - Student participates in more small-group tutoring while weekly PM continues.
  - In the RTI model we’re discussing:
    - Student moves to Tier 3 (tertiary prevention).
    - Comprehensive evaluation answers questions, determines disability, and suggests what special education services are appropriate.
Tier 2—Secondary Prevention: Determining Response With PM

Weeks of Instruction

Words Read Correctly

100
90
80
70
60
50
40
30
20
10
0

1 2 3 4 5 6 7 8 9 10 11 12 13 14
## Tier 2—Secondary Prevention: Confirming Risk Status With PM

<table>
<thead>
<tr>
<th>Grade</th>
<th>CBM Probe</th>
<th>&lt; Slope</th>
<th>&lt; End Level</th>
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<td>Letter Sound Fluency</td>
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<td>&lt; 30</td>
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<td>&lt; 60</td>
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<td>Grade 3</td>
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<td>Grade 4</td>
<td>Maze Fluency</td>
<td>&lt; 0.25</td>
<td>&lt; 25</td>
</tr>
<tr>
<td>Grade 5</td>
<td>Maze Fluency</td>
<td>&lt; 0.25</td>
<td>&lt; 25</td>
</tr>
<tr>
<td>Grade 6</td>
<td>Maze Fluency</td>
<td>&lt; 0.25</td>
<td>&lt; 25</td>
</tr>
</tbody>
</table>

Note: These figures may change pending additional RTI research.
Tier 2—Secondary Prevention: Determining Response With PM

David’s slope:

\[
\frac{54 - 24}{8} = 3.75
\]
Tier 2—Secondary Prevention

Case B

Student Does Not Have a Disability

1. Screening
   Is this student at risk?
   Word Identification Fluency = 10.5
   No
   Yes

2. Assessing Tier 1 Response
   Is this student responsive to general education?
   Word Identification Fluency Slope = 1.8
   Yes
   No

3. Assessing Tier 2 Response
   Is this student responsive to diagnostic instructional trial?
   Word Identification Fluency = NA
   Yes
   No

4. Disability Classification/Special Education Placement
   What is the student's disability label?
   LD
   MR
   EBD
Tier 2—Secondary Prevention: Determining Response With PM

![Graph showing the progression of digits correct over weeks of instruction.](image-url)
### Tier 2—Secondary Prevention: Confirming Risk Status With PM

<table>
<thead>
<tr>
<th>Grade</th>
<th>Computation</th>
<th>Concepts &amp; Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; Slope</td>
<td>&lt; End level</td>
</tr>
<tr>
<td>Grade 1</td>
<td>&lt; 0.50</td>
<td>&lt; 20 digits</td>
</tr>
<tr>
<td>Grade 2</td>
<td>&lt; 0.40</td>
<td>&lt; 20 digits</td>
</tr>
<tr>
<td>Grade 3</td>
<td>&lt; 0.40</td>
<td>&lt; 20 digits</td>
</tr>
<tr>
<td>Grade 4</td>
<td>&lt; 0.70</td>
<td>&lt; 20 digits</td>
</tr>
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<td>Grade 5</td>
<td>&lt; 0.70</td>
<td>&lt; 20 digits</td>
</tr>
<tr>
<td>Grade 6</td>
<td>&lt; 0.70</td>
<td>&lt; 20 digits</td>
</tr>
</tbody>
</table>

Note: These figures may change pending additional RTI research.
Tier 2—Secondary Prevention: Determining Response With PM

Martha’s slope:

\[(10 - 6) \div 8 = 0.5\]
Tier 2—Secondary Prevention

Case C

Student Does Have a Disability

- Step 1: Screening
  Is this student suspected at risk (Word Identification Fluency < 15)?
  - No
  - Yes

- Step 2: Assessing Tier 1 Response
  Is this student unresponsive to general education (Word Identification Fluency Slope < 1.8)?
  - No
  - Yes

- Step 3: Assessing Tier 2 Response
  Is this student unresponsive to Tier 2 tutoring (Word Identification Fluency Slope < 1.8 AND end level < 30)?
  - No
  - Yes

- Step 4: Disability Classification/Special Education Placement
  What is the student’s disability label?
  - LD
  - MR
  - EBD
Tier 2—Secondary Prevention: Review

- Suspected at-risk students with inadequate CBM performance in Tier 1 are tutored in small groups.
  - Tutoring uses research-based interventions taught by school tutors.
- Student progress is monitored weekly:
  - Students with adequate slopes return to primary prevention, with continued PM.
  - Students with inadequate slopes move to tertiary prevention (Tier 3).
Three Tiers of RTI

TIER 1: Primary Prevention
- General education setting
- Research-based instruction
- Screening to identify students suspected to be at risk
- PM to (dis)confirm risk status

At-risk students

TIER 2: Secondary Prevention
- Validated or researched-based tutoring
- PM to assess responsiveness

Responsive

Unresponsive

TIER 3: Tertiary Prevention

Responsive

Unresponsive
Three Tiers of RTI

TIER 1: Primary Prevention
- General education setting
- Research-based instruction
- Screening to identify students suspected to be at risk
- PM to (dis)confirm risk status

At-risk students

TIER 2: Secondary Prevention
- Validated or researched-based tutoring
- PM to assess responsiveness

TIER 3: Tertiary Prevention

Responsive
Unresponsive
Tier 3—PM in Tertiary Prevention

- IEP goals are established for individual student.
- Individualized programs are formulated for individual student.
- Student progress is monitored weekly.
  - With adequate slopes or end levels, students return to secondary or primary prevention.

*First, need to identify level of material where PM should be conducted (at instructional level).*
Finding Level for Reading PM

- Determine student reading grade level at year’s end
- Administer three passages at this level:
  - Fewer than 10 correct words, use Word Identification Fluency
  - Between 10 and 50 words, but less than 85–90% correct, move to next lower level of test and administer three passages at this level
  - More than 50 correct words, move to highest level of text where student reads 10–50 words
- Maintain appropriate level for entire year
Finding Level for Math PM

- Determine student math grade level at year’s end
- On two separate days, administer two CBM tests at grade level lower:
  - If average score is less than 10, move down one level
  - If average score is between 10 and 15, use this level
  - If average score is greater than 15, reconsider grade-level material
- Maintain appropriate level for entire year
Tier 3—PM in Tertiary Prevention: Setting IEP Goals

- End-of-year benchmarking
- Intra-individual framework
- National norms for weekly rate of improvement (slope)
Tier 3—PM in Tertiary Prevention: Setting Goals With End-of-Year Benchmarking

- Setting IEP goals
  - End-of-year benchmarking
    - Identify appropriate grade-level benchmark
    - Mark benchmark on student graph with an X
    - Draw goal-line from first three CBM scores to X
### Tier 3—PM in Tertiary Prevention: Setting Goals With End-of-Year Benchmarking

<table>
<thead>
<tr>
<th>Grade</th>
<th>Reading</th>
<th>Computation</th>
<th>Concepts and Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>40 sounds/minute (LSF)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Grade 1</td>
<td>60 words/minute (WIF)</td>
<td>20 digits</td>
<td>20 points</td>
</tr>
<tr>
<td>Grade 2</td>
<td>75 words/minute (PRF)</td>
<td>20 digits</td>
<td>20 points</td>
</tr>
<tr>
<td>Grade 3</td>
<td>100 words/minute (PRF)</td>
<td>30 digits</td>
<td>30 points</td>
</tr>
<tr>
<td>Grade 4</td>
<td>20 replacements/2.5 minutes (Maze)</td>
<td>40 digits</td>
<td>30 points</td>
</tr>
<tr>
<td>Grade 5</td>
<td>25 replacements/2.5 minutes (Maze)</td>
<td>30 digits</td>
<td>15 points</td>
</tr>
<tr>
<td>Grade 6</td>
<td>30 replacements/2.5 minutes (Maze)</td>
<td>35 digits</td>
<td>15 points</td>
</tr>
</tbody>
</table>

Note: These figures may change pending additional RTI research.
Tier 3—PM in Tertiary Prevention: Setting Goals With End-of-Year Benchmarking
Tier 3—PM in Tertiary Prevention: Setting Goals With End-of-Year Benchmarking
Tier 3—PM in Tertiary Prevention: Setting Goals With End-of-Year Benchmarking
Setting IEP goals:

- Intra-individual framework
  - Identify weekly rate of improvement (slope) using at least eight data points
  - Multiply slope by 1.5
  - Multiply by number of weeks until end of year
  - Add to student’s baseline score
  - This is the end-of-year goal
Tier 3—PM in Tertiary Prevention: Setting Goals With Intra-Individual Framework

❖ Setting IEP goals

❖ Intra-individual framework

❖ Identify weekly rate of improvement using at least eight data points
  ❖ First eight scores slope = 0.43

❖ Multiply slope by 1.5
  ❖ $0.43 \times 1.5 = 0.645$

❖ Multiply by number of weeks until end of year
  ❖ $0.645 \times 14 = 9.03$

❖ Add to student’s baseline score
  ❖ $9.03 + 4.625 = 13.66$

❖ 13.66 (or 14) is student’s end-of-year goal
Tier 3—PM in Tertiary Prevention: Setting Goals With Intra-Individual Framework
1. Identify weekly rate of improvement (slope) using at least eight data points:
   \[ \text{slope} = \frac{18 - 11}{7} = 1.0 \]

2. Multiply slope by 1.5:
   \[ 1.0 \times 1.5 = 1.5 \]

3. Multiply (slope \times 1.5) by number of weeks until end of year:
   \[ 1.5 \times 12 = 18 \]

4. Add to student’s baseline score (the baseline is the average of Cecelia’s first eight scores):
   \[ 18 + 14.65 = 32.65 \]

5. Mark goal (32.65) on student graph with an X

6. Draw goal-line from baseline to X
Tier 3—PM in Tertiary Prevention: Setting Goals With Intra-Individual Framework

![Graph showing the relationship between weeks of instruction and digits correct.](image-url)
Tier 3—PM in Tertiary Prevention: Setting Goals With National Norms for Weekly Improvement

- Setting IEP goals:
  - National norms for weekly rate of improvement (slope)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Reading—Slope</th>
<th>Computation CBM—Slope for Digits Correct</th>
<th>Concepts and Applications CBM—Slope for Points</th>
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<tbody>
<tr>
<td>1</td>
<td>1.8 (WIF)</td>
<td>.35</td>
<td>No data available</td>
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<tr>
<td>2</td>
<td>1.5 (PRF)</td>
<td>.30</td>
<td>.40</td>
</tr>
<tr>
<td>3</td>
<td>1.0 (PRF)</td>
<td>.30</td>
<td>.60</td>
</tr>
<tr>
<td>4</td>
<td>.40 (Maze)</td>
<td>.70</td>
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<tr>
<td>5</td>
<td>.40 (Maze)</td>
<td>.40</td>
<td>.70</td>
</tr>
<tr>
<td>6</td>
<td>.40 (Maze)</td>
<td>.70</td>
<td>.70</td>
</tr>
</tbody>
</table>

Note: These figures may change pending additional RTI research.
Tier 3—PM in Tertiary Prevention: Setting Goals With National Norms for Weekly Improvement

- Setting IEP goals:
  - National norms for weekly rate of improvement (slope)
  - First three scores average (baseline) = 14
  - Norm for fourth-grade computation = 0.70
  - Multiply norm by number of weeks left in year
    - \( 16 \times 0.70 = 11.2 \)
  - Add to baseline average
    - \( 11.2 + 14 = 25.2 \)
  - Student’s end-of-year goal is 25.2 (or 25)
Tier 3—PM in Tertiary Prevention: Setting Goals With National Norms for Weekly Improvement
## Tier 3—PM in Tertiary Prevention: Setting Goals With National Norms for Weekly Improvement

<table>
<thead>
<tr>
<th>Grade</th>
<th>Reading—Slope</th>
<th>Computation CBM—Slope for Digits Correct</th>
<th>Concepts and Applications CBM—Slope for Points</th>
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<td>—</td>
</tr>
<tr>
<td>1</td>
<td>1.8 (WIF)</td>
<td>0.35</td>
<td>No data available</td>
</tr>
<tr>
<td>2</td>
<td>1.5 (PRF)</td>
<td>0.30</td>
<td>0.40</td>
</tr>
<tr>
<td>3</td>
<td>1.0 (PRF)</td>
<td>0.30</td>
<td>0.60</td>
</tr>
<tr>
<td>4</td>
<td>0.40 (Maze)</td>
<td>0.70</td>
<td>0.70</td>
</tr>
<tr>
<td>5</td>
<td>0.40 (Maze)</td>
<td>0.70</td>
<td>0.70</td>
</tr>
<tr>
<td>6</td>
<td>0.40 (Maze)</td>
<td>0.40</td>
<td>0.70</td>
</tr>
</tbody>
</table>

Note: These figures may change pending additional RTI research.
Tier 3—PM in Tertiary Prevention: Setting Goals With National Norms for Weekly Improvement

1. Average the student’s first three scores (baseline):
   \[ \text{Baseline} = \frac{(12 + 10 + 12)}{3} = 11.33 \]

2. Find the appropriate norm from the table:
   \[ 0.30 \]

3. Multiply norm by number of weeks left in year:
   \[ 0.30 \times 17 = 5.1 \]

4. Add to baseline:
   \[ 5.1 + 11.33 = 16.43 \]

5. Mark goal (16.43) on student graph with an X

6. Draw goal-line from baseline
Tier 3—PM in Tertiary Prevention: Setting Goals With National Norms for Weekly Improvement
Tier 3—PM in Tertiary Prevention: Designing Individualized Programs

- Monitor adequacy of student progress and inductively design effective, individualized instructional programs

- Decision rules for graphs:
  - Based on four most recent consecutive scores
  - Based on student’s trend-line
Tier 3—PM in Tertiary Prevention: Four-Point Method

Weeks of Instruction

Problems Correct in 7 Minutes

most recent 4 points

goal-line

- X
Tier 3—PM in Tertiary Prevention: Four-Point Method

- most recent 4 points
- goal-line

Problems Correct in 7 Minutes

Weeks of Instruction
Tier 3—PM in Tertiary Prevention: Based on Trend

Weeks of Instruction

Problems Correct in 7 Minutes

- trend-line
- goal-line

Based on Trend X X X

goal-line

National Center on Response to Intervention
Tier 3—PM in Tertiary Prevention: Based on Trend
Tier 3—PM in Tertiary Prevention: Based on Trend

![Graph showing trend-line and goal-line](image)
## Tier 3—PM in Tertiary Prevention: Determining Response in Reading

<table>
<thead>
<tr>
<th>Grade</th>
<th>CBM Probe</th>
<th>&gt; Slope</th>
<th>&gt; End Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>Letter Sound Fluency</td>
<td>&gt; 1</td>
<td>&gt; 40</td>
</tr>
<tr>
<td>Grade 1</td>
<td>Word Identification Fluency</td>
<td>&gt; 1.8</td>
<td>&gt; 50</td>
</tr>
<tr>
<td>Grade 2</td>
<td>Passage Reading Fluency</td>
<td>&gt; 1</td>
<td>&gt; 60</td>
</tr>
<tr>
<td>Grade 3</td>
<td>Passage Reading Fluency</td>
<td>&gt; 0.75</td>
<td>&gt; 70</td>
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<tr>
<td>Grade 4</td>
<td>Maze Fluency</td>
<td>&gt; 0.25</td>
<td>&gt; 25</td>
</tr>
<tr>
<td>Grade 5</td>
<td>Maze Fluency</td>
<td>&gt; 0.25</td>
<td>&gt; 25</td>
</tr>
<tr>
<td>Grade 6</td>
<td>Maze Fluency</td>
<td>&gt; 0.25</td>
<td>&gt; 25</td>
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</tbody>
</table>

*Note: These figures may change pending additional RTI research.*
## Tier 3—PM in Tertiary Prevention: Determining Response in Math

<table>
<thead>
<tr>
<th>Grade</th>
<th>Computation</th>
<th>Concepts and Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; Slope</td>
<td>&gt; End level</td>
</tr>
<tr>
<td></td>
<td>&gt; 0.50</td>
<td>&gt; 20 digits</td>
</tr>
<tr>
<td>Grade 1</td>
<td>&gt; 0.40</td>
<td>&gt; 0.40</td>
</tr>
<tr>
<td>Grade 2</td>
<td>&gt; 0.40</td>
<td>&gt; 20 digits</td>
</tr>
<tr>
<td>Grade 3</td>
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<td>Grade 4</td>
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<td>&gt; 20 digits</td>
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<td>Grade 5</td>
<td>&gt; 0.70</td>
<td>&gt; 0.70</td>
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<tr>
<td>Grade 6</td>
<td>&gt; 0.70</td>
<td>&gt; 20 digits</td>
</tr>
</tbody>
</table>

Note: These figures may change pending additional RTI research.
Tier 3—PM in Tertiary Prevention: Review

- Students receive special education services
  - IEP goals are set.
  - Individualized programs are designed and implemented.

- Student progress is monitored:
  - Students with adequate slopes and projected end levels return to Tier 2 or Tier 1, with ongoing PM.
  - Students with inadequate slopes and projected end levels remain in Tier 3, with ongoing PM.
Three Tiers of RTI

TIER 1: Primary Prevention
- General education setting
- Research-based instruction
- Screening to identify students suspected to be at risk
- PM to (dis)confirm risk status

At-risk students

TIER 2: Secondary Prevention
- Validated or researched-based tutoring
- PM to assess responsiveness

Responsive
Unresponsive

TIER 3: Tertiary Prevention
- Special education
- CBM to set IEP goals
- PM to formulate individualized programs
- PM to assess responsiveness

Responsive
Unresponsive

At-risk students
Another Look: Health Care Analogy

- High blood pressure (HBP) can lead to heart attacks or strokes (like academic failure can produce serious long-term negative consequences).
- At the annual check-up (primary prevention), HBP screening (like annual fall screening for low reading or math scores).
- If screening suggests HBP, then monitoring over 6-8 weeks occurs to verify HBP (like PM to ([dis]confirm risk).
- If HBP is verified, second prevention occurs with relatively inexpensive diuretics, which are effective for vast majority, and monitoring continues (like small-group Tier 2 tutoring, using a standard treatment protocol, with PM to index response).
- For patients who fail to respond to secondary prevention (diuretics), then tertiary prevention occurs—experimentation with more expensive medications (e.g., ACE inhibitors, beta blockers), with ongoing monitoring, to determine which drug or combination of drugs is effective (like individualized instructional programs inductively formulate with progress monitoring).
Case Studies
Case Study at Fenwick

- Fenwick uses a three-tier model.
- Every teacher uses strong research-based reading curriculum.
  - Small percentage of students fail to achieve end-of-year CBM benchmarks.
Case Study at Fenwick

- Tier 1 (Primary Prevention)
  - Universal screening for suspected at-risk students:
    - CBM-WIF cut-off is 15.
  - Suspected at-risk students are monitored using CBM for 6 weeks.
    - Students with CBM-WIF slope of 1.8-word increase per week are responsive to Tier 1.
    - Students with CBM-WIF slope below 1.8-word increase per week are unresponsive to Tier 1.
Case Study at Fenwick

- Tier 2 (Secondary Prevention):
  - Standard tutoring protocol:
    - 45 minutes / four times a week / 15 weeks
  - Trained tutors
- Tutoring focus:
  - Phonological awareness
  - Letter sound recognition
  - Sight word recognition
  - Short story reading
Case Study at Fenwick

- Tier 2 (Secondary Prevention)
  - Weekly PM:
    - Students with CBM-WIF slope of 1.8-word increase per week are responsive to Tier 2.
    - Students with CBM-WIF slope below 1.8-word increase per week are unresponsive to Tier 2.
  - Unresponsive Tier 2 students receive a comprehensive evaluation and may be designated as having a LD.
Case Study at Fenwick

- Tier 2 (Secondary Prevention)
  - Comprehensive evaluation
  - Answer specific questions from primary and secondary prevention
  - Make distinctions among disabilities:
    - Wechsler and Vineland measures—LD and MR
    - Language measures—LD and language impairments
    - Rating scales, observations, interviews—LD and EBD
Case Study at Fenwick

- Tier 3 (Tertiary Prevention)
  - IEP goals
  - Formative decision-making to design individually tailored programs
  - Weekly PM:
    - Change ineffective instructional programs
    - Make decisions about student exit from or entry into special education
Case Study at Fenwick

- Key distinctions between Tier 2 and Tier 3:
  - Tier 3 special educators have lower student–teacher ratios (1:1 or 1:2).
  - Tier 3 provides more instructional time.
  - Tier 3 uses PM to formulate individually tailored programs.
Case Study at Fenwick: Dewey

- Dewey was suspected of being at risk.  
  – CBM-WIF score was 5.5 (below 15 cut-off).
- Primary prevention performance was monitored for 6 weeks:  
  – CBM-WIF slope was 0.4 (below 1.8 cut-off).
- Dewey was unresponsive to primary prevention.  
- Dewey was moved to secondary prevention.
Case Study at Fenwick: Dewey

- Dewey received secondary prevention tutoring:
  - 45 minutes/four times a week/15 weeks
- Progress was monitored weekly:
  - After 15 weeks, slope was 1.86
  - 1.86 exceeds the 1.8 cut-off for positive RTI.
Case Study at Fenwick: Dewey

- Tier 1 slope: \((7 - 5) \div 5 = 0.4\)
- Tier 2 slope: \((33 - 7) \div 14 = 1.86\)
Case Study at Fenwick: Dolphina

- Dolphina was suspected of being at risk:
  - CBM-WIF score was 7.5 (below 15 cut-off).
- Primary prevention performance was monitored for 6 weeks:
  - CBM-WIF slope was 0.2 (below 1.8 cut-off).
- Dolphina was unresponsive to primary prevention.
- Dolphina was moved to secondary prevention.
Case Study at Fenwick: Dolphina

- Dolphina received secondary prevention tutoring:
  - 45 minutes/four times a week/15 weeks

- Progress was monitored weekly:
  - After 15 weeks, slope was 0.14.
  - 0.14 was below the 1.8 cut-off for positive RTI.
  - Dolphina was moved to tertiary prevention.
Case Study at Fenwick: Dolphina

Tier 1 slope
\[(7 - 6) ÷ 5 = 0.2\]

Tier 2 slope
\[(10 - 8) ÷ 14 = 0.14\]
Case Study at Fenwick: Dolphina

- Comprehensive evaluation:
  - Interview of primary prevention teacher and secondary prevention tutor
  - Administration of Vineland Adaptive Rating Scale and Wechsler Abbreviated Scale of Intelligence
- Ruled out mental retardation
Case Study at Fenwick: Dolphina

- Comprehensive evaluation:
  - Administered expressive and pragmatic language measures
    - Ruled out language impairment
  - Gathered rating scales, classroom observations, and parent interviews
    - Ruled out emotional behavioral disorder
Case Study at Fenwick: Dolphina

- Dolphina in tertiary prevention:
  - Classified as LD
  - IEP goals set
  - Individualized program established:
    - One-on-one instruction 1 hour each day
    - Another half-hour of small-group tutoring session each day with one other student
Case Study at Fenwick: Dolphina

- Dolphina in tertiary prevention:
  - Progress was monitored twice weekly:
    - Goal set at 1.5 words of improvement/week.
    - After 6 weeks, Dolphina’s slope of 0.2 was below goal.
    - Program change was initiated.
    - After a few months, Dolphina’s slope of 2.375 exceeded goal.
    - Goal was increased.
Case Study at Fenwick: Dolphina

slope \( \frac{13 - 12}{5} = 0.2 \)

slope \( \frac{33 - 14}{8} = 2.375 \)
Case Study at Bear Lake

- Bear Lake uses a three-tier model.
- Every teacher uses strong research-based math program.
  - Small percentage (5%) of students fail to achieve end-of-year CBM computation benchmarks.
Case Study at Bear Lake

Tier 1 (Primary Prevention)
– Universal screening for suspected at-risk students:
  - CBM computation cut-off of 10 for second-grade students

<table>
<thead>
<tr>
<th>Student</th>
<th>CBM Score</th>
<th>Student</th>
<th>CBM Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marcie</td>
<td>13</td>
<td>Cheyenne</td>
<td>13</td>
</tr>
<tr>
<td>Anthony</td>
<td>12</td>
<td>Marianne</td>
<td>18</td>
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<tr>
<td>Deterrious</td>
<td>15</td>
<td>Kevin</td>
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<td>Amy</td>
<td>18</td>
<td>Dax</td>
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<td>Matthew</td>
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<td>Ethan</td>
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<td>Noah</td>
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<tr>
<td>Nina</td>
<td>8</td>
<td>Cyrus</td>
<td>20</td>
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</tbody>
</table>
Case Study at Bear Lake

- **Tier 1 (Primary Prevention)**
- **PM for 7 weeks:**
  - Students with CBM computation slope of 0.20 are responsive to Tier 1.
  - Students with CBM computation slope below 0.20 are unresponsive to Tier 1.

<table>
<thead>
<tr>
<th>Student</th>
<th>CBM Score</th>
<th>Student</th>
<th>CBM Score</th>
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<td>Anthony</td>
<td>12</td>
<td>Marianne</td>
<td>18</td>
</tr>
<tr>
<td>Deterrious</td>
<td>15</td>
<td>Kevin</td>
<td>19</td>
</tr>
<tr>
<td>Amy</td>
<td>18</td>
<td>Dax</td>
<td>13</td>
</tr>
<tr>
<td>Matthew</td>
<td>11</td>
<td>Ethan</td>
<td>6</td>
</tr>
<tr>
<td>Calliope</td>
<td>16</td>
<td>Colleen</td>
<td>21</td>
</tr>
<tr>
<td>Noah</td>
<td>25</td>
<td>Grace</td>
<td>14</td>
</tr>
<tr>
<td>Nina</td>
<td>8</td>
<td>Cyrus</td>
<td>20</td>
</tr>
</tbody>
</table>
Tier 1 (Primary Prevention)

- Students responsive to Tier 1 (slope greater than 0.20) remain in general education.
- Students unresponsive to Tier 1 (slope less than 0.20) move to Tier 2 secondary prevention tutoring.
Case Study at Bear Lake

- Tier 2 (Secondary Prevention)
  - Standard tutoring protocol:
    - 30 minutes/three times a week/16 weeks
    - Trained tutors
  - Tutoring focus:
    - Number concepts
    - Basic math facts
    - Addition and subtraction of two-digit numbers
    - Word-problem solving
    - Missing addends
Case Study at Bear Lake

- Tier 2 (Secondary Prevention)
  - Weekly PM:
    - Students with CBM computation slope or end level above cut-off are responsive to Tier 2.
    - Students with CBM computation slope or end level below cut-off are unresponsive to Tier 2.
  - Unresponsive Tier 2 students receive a comprehensive evaluation and may be designated as having a disability.
Case Study at Bear Lake

- Tier 2 (Secondary Prevention)
  - Comprehensive evaluation
  - Answer specific questions from primary and secondary prevention
  - Make distinctions among disabilities
    - Wechsler and Vineland measures—LD and MR
    - Language measures—LD and language impairments
    - Rating scales, observations, interviews—LD and EBD
Case Study at Bear Lake

- Tier 3 (Tertiary Prevention)
  - IEP goals
  - Weekly PM:
    - Change ineffective instructional programs
    - Make decisions about which students exit special education
Case Study at Bear Lake: Nina

- Nina was suspected of being at risk.
  - CBM computation score was 8 (below 10 cut-off).
- Primary prevention performance was monitored for 7 weeks.
Case Study at Bear Lake: Nina

Nina’s slope

\[(8 - 8) ÷ 7 = 0.0\]
# Case Study at Bear Lake: Nina

<table>
<thead>
<tr>
<th>Grade</th>
<th>Inadequate Reading Slope</th>
<th>Inadequate Math Computation Slope</th>
<th>Inadequate Math Concepts and Applications Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>&lt; 1 (LSF)</td>
<td>&lt; 0.20</td>
<td>&lt; 0.20</td>
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<tr>
<td>Grade 1</td>
<td>&lt; 1.8 (WIF)</td>
<td>&lt; 0.25</td>
<td>&lt; 0.30</td>
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<tr>
<td>Grade 2</td>
<td>&lt; 1 (PRF)</td>
<td>0.20</td>
<td>&lt; 0.30</td>
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<td>Grade 3</td>
<td>&lt; 0.75 (PRF)</td>
<td>&lt; 0.20</td>
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<td>Grade 4</td>
<td>&lt; 0.25 (Maze)</td>
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<tr>
<td>Grade 5</td>
<td>&lt; 0.25 (Maze)</td>
<td>&lt; 0.50</td>
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</tr>
<tr>
<td>Grade 6</td>
<td>&lt; 0.25 (Maze)</td>
<td>&lt; 0.50</td>
<td>&lt; 0.50</td>
</tr>
</tbody>
</table>

Note: These figures may change pending additional RTI research.
Case Study at Bear Lake: Nina

Digits Correct in 3 Minutes vs. Weeks of Instruction
Case Study at Bear Lake: Ethan

- Ethan was suspected of being at risk.
  - CBM computation score of 6 (below 10 cut-off).
- Primary prevention performance was monitored for 7 weeks:
  - CBM computation slope was 0.14 (below 0.20 cut-off).
- Ethan was unresponsive to primary prevention.
- Ethan was moved to secondary prevention tutoring.
Case Study at Bear Lake: Ethan

- Ethan received secondary prevention tutoring: 30 minutes/three times a week/16 weeks
- CBM computation administered once each week
Case Study at Bear Lake: Ethan
Case Study at Bear Lake: Ethan

Digits Correct in 3 Minutes

Weeks of Instruction
Case Study at Bear Lake: Ethan

- Comprehensive evaluation:
  - Interview of primary prevention teacher and secondary prevention tutor
  - Vineland Adaptive Rating Scale and Wechsler Abbreviated Scale of Intelligence
    - Ruled out mental retardation
  - Expressive and pragmatic language measures
    - Ruled out language impairment
  - Rating scales, classroom observations, and parent interviews
    - Ruled out emotional behavioral disorder
Case Study at Bear Lake: Ethan

- Ethan in tertiary prevention:
  - Classified as LD
  - IEP goals set
  - Individualized program established
  - PM:
    - One-digit improvement per week
Case Study at Bear Lake: Ethan

Ethan’s slope

$(11 – 11) ÷ 5 = 0.0$
Case Study at Bear Lake: Ethan

![Graph showing weeks of instruction and digits correct in 3 minutes]

- Digits Correct in 3 Minutes
- Weeks of Instruction

National Center on Response to Intervention
Case Study at Bear Lake: Ethan

Digits Correct in 3 Minutes

Weeks of Instruction

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Frequently Asked Questions

- Will the RTI process delay identification?
  - RTI takes longer than 1-step comprehensive evaluation.
  - But, RTI enables students to receive services before identification so that learning problems can be addressed in Tier 2.
  - RTI helps many students get on a trajectory toward successful academic outcomes.
  - RTI facilitates early prevention and identification.
Frequently Asked Questions

- Does each student have to go through RTI, or can a student have a traditional assessment?
  - Schools should honor parent requests.
  - Schools should provide traditional 1-step comprehensive evaluation if parent requests.
What does validated intervention mean?
- Validated intervention is a set of practices that have proven efficacious using controlled studies.

What does research-based intervention mean?
- Research-based intervention incorporates instructional principles that have proven efficacious using controlled studies.
Who initiates the RTI process?

– Students are identified through universal screening.
– Universal screening is supplemented with PM to determine student response to primary prevention.
Frequently Asked Questions

What will be required for professional development?

– Staff need to learn to:

- Collect and interpret screening scores.
- Ensure quality of primary prevention.
- Collect and interpret ongoing PM data.
- Design Tier 2 programs with validated interventions.
- Implement Tier 2 programs with fidelity.
- Reform special education to improve its quality as a third tier of intervention.
Who is responsible for the various activities required to implement RTI as a method of LD identification?

- Collecting screening data: Teachers and aides
- Interpreting screening data: Special educators and school psychologists
- Ensuring quality of general education: Curriculum specialists, school psychologists, reading specialists
- Ensuring quality of Tier 2: Curriculum specialists, school psychologists, reading specialists
- Conducting the comprehensive evaluation: School psychologists, special educators
- Ensuring quality of Tier 3: Special educators
Frequently Asked Questions

- What proportion of students is likely to be identified as at risk for Tier 1 monitoring and for Tier 2 tutoring?
  - General education, questionable quality
    - 20–25%
  - General education, high quality
    - 9–10%
  - Tier 2, high quality
    - 3-5%
  - Tier 3, high quality
    - 1-2%
How long will the comprehensive evaluation be, and what professional is likely to give the assessment?

- Small number of brief tests
- Special educator or school psychologist
Frequently Asked Questions

- Are there schools currently implementing RTI as a method of LD identification and, if so, how can I learn more about their methods?
  - To obtain a list of model sites, contact Daryl Mellard
    - dmellard@ku.edu
CBM PM Materials and Resources

Appendix A
- AIMSweb/Edformation
- Dynamic Indicators of Basic Early Literacy Skills (DIBELS)/Sopris West
- EdCheckup
- Curriculum-Based Math Computation and Concepts/Applications Probes/Vanderbilt University
- STAR/Renaissance Learning
- Test of Silent Word Reading Fluency/Pro-Ed., Inc.
- Test of Word Reading Efficiency/Pro-Ed., Inc.
- Yearly ProgressPro™/McGraw-Hill
- Research Institute on Progress Monitoring, University of Minnesota
- Vanderbilt University

Appendix B
- Resources
Module Series

- This module is intended to be used in conjunction with a series of modules.
  - Introduction to CBM
  - CBM in the Content Areas
    - Reading
    - Math
    - Written Expression
  - Other Ways to Use CBM Data
  - Using CBM to Determine RTI
National Center on Response to Intervention

www.rti4success.org

This document was originally developed by the National Center on Student Progress Monitoring under Cooperative Agreement (#H326W0003) and updated by the National Center on Response to Intervention under Cooperative Agreement (#H326E07004) between the American Institutes for Research and the U.S. Department of Education, Office of Special Education Programs. The contents of this document do not necessarily reflect the views or policies of the Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government. This publication is copyright free. Readers are encouraged to copy and share it, but please credit the National Center on Response to Intervention.